

Zimbabwe Journal of Educational Research

The ZJER is published three times a year by the University of Zimbabwe, Human Resources Research Centre (HRRC).

Editor-in-Chief: Dr C.M. Nherera, University of Zimbabwe

Technical Editor: M. Chirumiko

Editorial Board

Cowden E.M. Chikombah
University of Zimbabwe
Charles M. Nherera
University of Zimbabwe
Levi M. Nyagura
University of Zimbabwe
N.D. Atkinson
University of Zimbabwe

Editorial Advisory Board

Linda Chisholm
Witwatersrand University
Donton S.J. Mkandawire
University of Namibia
John Schulle
Michigan State University
Ingemar Fagerlind
I.I.E., University of Stockholm

ORDERING INFORMATION

	Within Zimbabwe		Outside Zimbabwe	
	Annual	Three Year	Annual	Three Year
Individual	Z\$ 163	Z\$390	US \$80	US\$ 170
Institution	Z\$277	Z\$633	US\$ 110	US\$240
Single Copies	Z\$ 65	US\$35		

ZJER

HRRC, Faculty of Education
University of Zimbabwe
P O Box MP 167
Mount Pleasant
Harare, Zimbabwe

Tel: (263-4) 303271 Ext 1893, Fax: (263-4) 302182

e-mail: nherera@zimbix.uz.zw

Volume 10 Number 1 March 1998

ISSN 1013-3445

CONTENTS

**Teachers' Attitudinal Variables in the Implementation of the
Further-mathematics Curriculum as Correlates of Students' Learning
Outcomes**

Alausa Yesir Adeleke **1**

Arguments for and Against University Expansion in Zimbabwe

Fred Zindi **33**

**Democratisation of Governance in Tertiary Institutions: A Critical
Analysis of Perceived Involvement of the Student Union in the
Administration of Institutions of Higher Learning in Nigeria**

M. Olakekan Arikewuyo **50**

The 'Good' University Teacher as Perceived by the Students

Alec Ray Matambo and Sesedzai Muriro **60**

**A Comparative Analysis of Bruner's and Ausubel's Views on the
Learning Process and Their Implications for Zimbabwe**

Munhuweyi Peresuh **73**

A COMPARATIVE ANALYSIS OF BRUNER'S AND AUSUBEL'S VIEWS ON THE LEARNING PROCESS AND THEIR IMPLICATIONS FOR ZIMBABWE

Munhuweyi Peresuh
Department of Educational Foundations
Faculty of Education
University of Zimbabwe

ABSTRACT

Bruner's work focuses on learning through discovery. His position is that students learn best when they themselves discover the structure of a subject by inductive means. Ausubel believes that learning should be primarily deductive. Students must understand the more general concepts, or subsumers, before mastering details and sub-concepts. This paper compares and critically analyses the views of Bruner and Ausubel on the learning process and their relevance to Zimbabwe. Bruner's four principles of learning and Ausubel's meaningful verbal learning theory are presented and their implications for teaching with reference to Zimbabwe are discussed.

Introduction

Instructional implications can be derived from any theoretical position that deals with human learning. In some cases the implications are vague and remote; in the theories of Bruner and Ausubel, however, they are explicit. The following discussion of the implications of each of their positions takes the form of an examination of a long-enduring educational controversy between those who believe in teaching by discovery and those who do not.

Bruner's Theory of 'Discovery Learning'

Bruner (1974, 1983, 1991) is renowned in cognitive psychology as the chief advocate of the 'Discovery Learning' theory. It is worth pointing out at the outset that Bruner's concern with discovery learning has a certain uniqueness about it. This approach to learning emphasises the importance of understanding the structure of a subject being studied, the need for active learning as the basis for true understanding, and the value of inductive reasoning in learning (Woolfolk, 1995).

According to the Discovery Learning theory Bruner says that learning is not only restricted to "finding out something that before was unknown to mankind, but rather includes all forms of obtaining knowledge for oneself by the use of one's mind ..." (Bruner, in Anderson & Ausubel, 1966, p. 607). Being a proponent of a child-contoured education, Bruner has been vehemently opposed in this approach by other psychologists led by Ausubel who, by way of proffering an extreme view of discovery learning, suggests that Bruner is not correct when he says that learners do not require the services of teachers. However, Bruner denies this interpretation of his theory. He maintains that even in atmospheres where children are allowed to discover on their own, they still require the presence of the teacher. He recognises that teachers play the crucial role of giving the pupil as firm a grasp of the subject as they can. Their primary task as facilitators of learning is to make pupils as autonomous and self-propelled thinkers as they can so that even after formal schooling, the pupils can go along on their own.

In arguing his case in favour of the Discovery Learning theory, Bruner has shown that apart from the values and needs affecting the learner's perception, such values and needs also affect other cognitive processes like, for example, thinking and language. This view has led to the development of a psychology in education which places the child in a central role in the learning situation. Consequently, if needs, values, and experience are important in learning, then pedagogical approaches must take these into account in the process of helping each child to learn.

Therefore, according to Bruner (1974, 1983, 1991), teaching must be child-contoured.

Bruner's influence on Discovery Learning theory in particular and on education in general is based on four major principles: (a) motivation; (b) structure; (c) sequence, and (d) reinforcement. The four principles are aimed at producing a learning based on understanding and meaning rather than on the conditioning of facts and details.

Motivation

Crain (1980) echoes the humanists' view that people: "...are free and creative beings, capable of growth and self-actualization" (p.259).

Bruner says that children are naturally self-motivated to learn. In his view, motivation springs from their inborn curiosity, their inborn need to get to grips with the world around them by becoming competent at the things that really interest them. In the words of Siann & Ugwuegbu (1989), children "...have an inborn programming to interact with others which makes them respond favourably to teaching situations where they can work cooperatively with others" (p. 112).

Bruner therefore supports the humanist philosophy of motivation and learning that the role of the teacher is not that of prescribing, forcing, coaxing or imposing his own models on children. Instead, his role as a facilitator and helper consists not only in supervising the already existing learning process but also in ensuring that the learning conditions are met. Akin to Bruner, Rogers & Freiberg (1994) some of the humanist psychologists, believe that learning and motivation should be child-contoured.

Rogers & Freiberg (1994) suggest that teachers must, as much as possible, leave the children alone. They believe that children are capable of motivating themselves. However, the conditions in which pupils can become autonomous and self-propelled are those which include the teacher knowing his subject well, being sensitive to the feelings of the

learners in his charge and being aware of their individual differences, having a positive self-image and using a variety of teaching approaches.

Structure

Bruner (1974, 1983) thinks that the structure and mode of presentation are important instructional values. He believes that any body of knowledge can be taught in such a way as to be understood by almost every learner: "Any idea or problem or body of knowledge can be presented in a form simple enough so that any particular learner can understand it in a recognisable form" (Bruner, 1966, p. 44).

He urges for simplicity of presentation so that every learner can benefit to the maximum from an instructional programme. He considers that the structure of any knowledge domain can be represented in three ways: Firstly, it can be represented through a set of actions aimed at achieving a certain result and Bruner labels this mode of representation *inactive representation*. Secondly, it can be represented in a classroom situation in the form of talk and chalk, demonstration or discovery. Bruner refers to this as *iconic representation*, and thirdly, it can also be represented by a set of symbols that is governed by rules for forming or changing propositions or testing hypotheses. Bruner calls this 'symbolic representation'.

Important instructional instruments, structure and mode of representation would not assist the learner if the amount presented at a given time and the level with which it is presented is not taken cognisance of. As Bruner puts it, economy in teaching a body of knowledge "...relates to the amount of information that must be held in the mind and processed to achieve comprehension" (Bruner, 1966, p. 45).

Varying with the mode of representation and the different ages of learners, the implications to the teacher are that he/she must find it inadvisable to pass on vast amounts of information to learners in a short time for they will find it difficult to adequately process that information. To practise and increase economy, therefore, teachers must aim at simplifying things through formulae and short methods in mathematics and science. It is

more economical to use diagrammatic notations and summaries in subjects such as Social Studies, Religious Education, English and Zimbabwean languages (e.g., Shona, Ndaue, Ndebele, Kalanga, Tonga, etc).

Sequence

Bruner considers this principle to be very important in teaching and learning. Where young learners are involved in learning a specific area, Bruner advises and encourages that the learners move through a certain sequence. In considering the whole issue of sequencing, the modes of representation mentioned above become fully operational. In primary school grades, it is advised that there be lots of activity and movement in learning so that the child's earlier mental representations are inactive. In the middle primary school, teaching should be characterised by the use of images, diagrams, pictures, and models so that the representation is principally iconic. In the upper primary and secondary school, pupils should be in a position to process a variety of language forms. To this end, the material must be communicated to the pupil mostly in words so that the mode of representation is symbolic. Closely related to the question of sequencing of material is what Bruner calls the *spiral curriculum* which is a further component of his Discovery Learning theory. It has been stated earlier in this paper that any subject can be taught to any child in such a way as to be understood by almost every learner. If this hypothesis is true, "...then it should follow that a curriculum ought to be build around the great issues, principles and values that a society deems worthy of the continual concern of its members" (Bruner, 1974, p. 424).

The term spiral curriculum specifically refers to the same material being taught at different times or levels, but that each time the material is presented, it should contain more detail to deepen understanding on the part of the learner.

Reinforcement

This principle is what Bruner terms *feedback*, where learning is aided by results. In other words, a learner must receive knowledge about how he is getting on. The teacher must take careful note of the progress a learner is making along a particular learning sequence. This is to avoid incorporating into the learner's mental representation inappropriate elements which may distort and indeed thwart the spur to acquire more knowledge. Feedback has high motivational value especially when it is positive. Child (1981) makes particular comment on feedback when he says:

...pupils should have immediate knowledge of their performance for the knowledge to have any value. The longer the time between completing work and being told the verdict, in particular, if it is favourable, the less chance there is of the results having a motivational impact on the pupil. (p. 45)

If this hypothesis is valid, then knowledge is not only crucial but also advantageous to learning by furnishing it with an incentive for the work that is involved in the learning process. Bruner's idea of feedback is further buttressed by Morgan & King (1975), who say:

When you know how well you are doing, you are usually much more interested in learning than when you do not know especially on tedious tasks where the learner is likely to get bored, supplying some kind of feedback, or a record of accomplishment, helps to maintain interest. (p. 167)

The idea of feedback seems to apply at all levels of education. For example, university students pursuing various degree programmes are greatly encouraged to work harder by the higher scores they get in their written assignments. It would therefore be true that the lecturer who quickly marks and soon returns marked assignments to his students has more impact and effectiveness on his students' performance than the lecturer who keeps the students' assignments unmarked for too long.

Similarly, the primary or secondary school teacher for example, who neglects marking pupils' written work and other exercises is of little help to the learner. The teacher should attend to children's written work and return it to them at the earliest possible opportunity if the results are to be of any meaningful use to the learners in their overall learning development. In subjects where projects can be given to the class, it is important for the teacher to recognise that, while the will to learn is an intrinsic motive and that pupils ought to be left to themselves as much as possible, whatever projects he or she mounts in the classroom must in all considerations have a beginning, a plan, and a terminus. If the pupil's project for the class or a particular group of learners is badly planned in the sense of it being directionless and without any provision for the teacher to interrupt and check progress, the sense of accomplishment in the pupils will not be achieved. Using the idea of feedback, it is important to note Bruner's efforts to respond to some of his critics on Discovery Learning theory, who have suggested that through it, he does not regard the importance of the teacher in the learning process: "In brief, tasks that are interrupted are much more likely to be returned to and completed, and much more likely to be remembered, than comparable tasks that one has completed without interruption" (Bruner, 1966, p. 119).

Bruner is adamant that even with the minimum of interruption by the teacher, the most valuable and long-lasting learning is that which occurs as a result of the child's own discovery of the material before him.

While Bruner's contribution to educational practice has been enormous, and his child-contoured approach has certainly transformed attitudes to teaching in Zimbabwe since the mid-seventies, his Discovery Learning theory has not been without problems and disadvantages.

In the mistaken belief that Discovery Learning theory means no direct interaction between teachers and pupils, many teachers have tended to abandon all teaching by formal means. In a majority of cases, they leave the young learners to struggle on their own without any real professional guidance. For some teachers, Discovery Learning theory has proved a virtual passport to laziness. In some classroom situations, the teacher has

become just a figure-head who does his best to do as little as possible in the way of planning and scheming seriously for the success of the learners in his or her care.

Bruner admits that while the Discovery Learning theory is readily applicable in mathematics and the sciences, it has been found difficult to use in certain areas of the humanities and certainly rather difficult to apply in teaching languages, particularly foreign ones (Bruner, 1978). Examples that come to mind are spelling, vocabulary, linguistics and capital cities of different countries. These cannot easily be taught effectively through discovery methods.

Bruner (1978) warns that too much reliance on Discovery Learning theory can lead to an absence of structure, both in the classroom and in the child's conceptual development. The importance of children themselves deriving concepts from a body of material cannot be minimised. However, in the absence of structure, meaningfulness, careful planning and scheming, the entire learning process can be very confusing, if not distasteful altogether to the learner.

Ausubel's Theory of Meaningful Verbal Learning

Ausubel (1963, 1977) is a psychologist who, though cognitive in approach like Bruner, offers a contrasting view of learning to that of Bruner. Ausubel is known in educational psychology as a champion of *meaningful verbal learning* as opposed to *rote learning*. Because he sees the teacher as playing a central role in a learning situation, he would rather have Discovery Learning theory termed *guided discovery learning*. To this end, he insists that it is the teacher's responsibility to convey meaningful learning through actual teaching.

First and foremost, Ausubel (1963, 1977) stresses the fact that material is easily learnt if it is arranged in a logical sequence. He emphasises that it is not just logical sequence or meaningfulness to the teacher that is important, but meaningfulness to the learner, too. What Ausubel implies is, therefore, that before presenting any material, a teacher must carefully

study, analyse, and take note of the concepts and terminologies that are contained in it and arrange all these in an order of priority. Noting down of these points involves careful planning and scheming. During the actual presentation of the subject matter, the teacher must move slowly from what the learners know to what they do not know.

Ausubel (1977) goes on to say that the learners must be ready for the ideas to be presented to them. The ideas must not be so strange or foreign that the learner cannot subsume them. More specifically then, meaningful verbal learning requires firstly that the material to be learnt must be relatable to some hypothetical cognitive structure, some kind of frame-work or model. In studying the social sciences, for example, the cognitive structure would include individual elements or subjects such as sociology, economics and psychology. The three would form a cognitive structure and as a student learns new material in this cognitive field, "...the cognitive structure would then interact with and is appropriately subsumed under a relevant and more inclusive conceptual system" (Ausubel & Anderson, 1966, p. 105).

In simple terms, Ausubel is saying that learning is easy if, for example, subjects are grouped according to the relatability of concepts between them. Economics, accounts and commerce constitute a network in which concepts are related, and so is the cognitive structure made from a combination of arts subjects like History, English, and Religious Studies. In relation to cognitive structure, Ausubel thinks that learning of new material cannot be meaningful unless it is related to the individual's past or immediate past experience. The learner must possess the desire and intent to relate the ideas from his past experience to the cognitive structure.

Pursuing his argument in favour of meaningful verbal learning, Ausubel (1977) juxtaposes it with rote learning. In the words of Woolfolk (1977, p. 319) "Rote memorisation is not considered meaningful learning, since material learned by rote is not connected with existing knowledge". Ausubel is of the view that pupils resort to rote learning in situations where the material to be learnt lacks logical meaningfulness.

become just a figure-head who does his best to do as little as possible in the way of planning and scheming seriously for the success of the learners in his or her care.

Bruner admits that while the Discovery Learning theory is readily applicable in mathematics and the sciences, it has been found difficult to use in certain areas of the humanities and certainly rather difficult to apply in teaching languages, particularly foreign ones (Bruner, 1978). Examples that come to mind are spelling, vocabulary, linguistics and capital cities of different countries. These cannot easily be taught effectively through discovery methods.

Bruner (1978) warns that too much reliance on Discovery Learning theory can lead to an absence of structure, both in the classroom and in the child's conceptual development. The importance of children themselves deriving concepts from a body of material cannot be minimised. However, in the absence of structure, meaningfulness, careful planning and scheming, the entire learning process can be very confusing, if not distasteful altogether to the learner.

Ausubel's Theory of Meaningful Verbal Learning

Ausubel (1963, 1977) is a psychologist who, though cognitive in approach like Bruner, offers a contrasting view of learning to that of Bruner. Ausubel is known in educational psychology as a champion of *meaningful verbal learning* as opposed to *rote learning*. Because he sees the teacher as playing a central role in a learning situation, he would rather have Discovery Learning theory termed *guided discovery learning*. To this end, he insists that it is the teacher's responsibility to convey meaningful learning through actual teaching.

First and foremost, Ausubel (1963, 1977) stresses the fact that material is easily learnt if it is arranged in a logical sequence. He emphasises that it is not just logical sequence or meaningfulness to the teacher that is important, but meaningfulness to the learner, too. What Ausubel implies is, therefore, that before presenting any material, a teacher must carefully

study, analyse, and take note of the concepts and terminologies that are contained in it and arrange all these in an order of priority. Noting down of these points involves careful planning and scheming. During the actual presentation of the subject matter, the teacher must move slowly from what the learners know to what they do not know.

Ausubel (1977) goes on to say that the learners must be ready for the ideas to be presented to them. The ideas must not be so strange or foreign that the learner cannot subsume them. More specifically then, meaningful verbal learning requires firstly that the material to be learnt must be relatable to some hypothetical cognitive structure, some kind of frame-work or model. In studying the social sciences, for example, the cognitive structure would include individual elements or subjects such as sociology, economics and psychology. The three would form a cognitive structure and as a student learns new material in this cognitive field, "...the cognitive structure would then interact with and is appropriately subsumed under a relevant and more inclusive conceptual system" (Ausubel & Anderson, 1966, p. 105).

In simple terms, Ausubel is saying that learning is easy if, for example, subjects are grouped according to the relatability of concepts between them. Economics, accounts and commerce constitute a network in which concepts are related, and so is the cognitive structure made from a combination of arts subjects like History, English, and Religious Studies. In relation to cognitive structure, Ausubel thinks that learning of new material cannot be meaningful unless it is related to the individual's past or immediate past experience. The learner must possess the desire or intent to relate the ideas from his past experience to the cognitive structure.

Pursuing his argument in favour of meaningful verbal learning, Ausubel (1977) juxtaposes it with rote learning. In the words of Woolfolk (1995, p. 319) "Rote memorisation is not considered meaningful learning, since material learned by rote is not connected with existing knowledge". Ausubel is of the view that pupils resort to rote learning in situations where the material to be learnt lacks logical meaningfulness. Rote

learning occurs when the learner lacks relevant ideas in his own cognitive structure. Furthermore, pupils learn by rote when they lack a meaningful learning set. A learning set is a way of seeing the world; it is largely affected by one's experience or lack of it. It is constituted by one's ideas and expectations spurred on by experience. In one of his experiments on how children of the poor and those of the rich develop perceptually, Bruner found that the children from poorer families did not have a well-balanced learning set (Bruner, 1983). In short, meaningful learning enables the learner to relate the new concept to knowledge acquired previously. There has to be an intent on the part of the learner to relate his/her previous ideas or knowledge to the new material in an organised manner.

It does happen often, however, that when presenting new learning material, the teacher discovers that some of the pupils do not already have relevant subsumers. In such an event, the teacher must provide organisers. Where the material is completely new, Ausubel suggests that the teacher must provide what he calls *advance organisers* before the learning of new material can take place. Advance organisers are complete sets of ideas or concepts given to the learner before the material to be learnt is presented. It is meant to provide stable cognitive structures to which the new learning can be anchored (subsumed). The advance organiser is intended to increase recall (prevent loss of dissociability). The use of advance organisers is called for then, under two circumstances: The first is when learners have no relevant information to which they can relate the new learning; the second is when relevant subsuming information is already present but is not likely to be recognised as relevant by the learner (Ausubel, 1977).

Four characteristics of advance organisers have been described. First, advance organisers are presented before the lesson. Second, they are designed to bring to mind prior knowledge that is relevant to the lesson (to activate related subsumers). Third, advance organisers are presented at a higher level of abstraction than the material presented later. In other words, advance organisers ordinarily consist of subsuming concepts.

Finally, advance organisers make explicit the connection between prior knowledge and the lesson to be taught.

Ausubel describes two different types of organisers — one to be used when the material is completely new and the other when it is somewhat familiar. The first is termed as *expository organiser* because it presents a description or exposition of relevant concepts. The second is called a comparative organiser because it is likely to make use of similarities and differences between new material and existing cognitive structure.

Advance organisers therefore constitute the introduction of any lesson. The introduction to any lesson must have a higher level of generality and inconclusiveness than the detailed subject-matter of the lesson. These organisers are introduced in advance of the learning material itself, are formulated in terms that are already familiar to the learner and are also presented at a higher level of obstructiveness, generality and inconclusiveness.

Discovery Versus Reception Learning

Bruner (1983) advocates the use of discovery learning in schools. This learning entails that learners are not presented with the subject matter in its final form, but rather are required to organise it themselves. This requires learners to discover for themselves relationships that exist among items of information. The most important and obvious feature of Bruner's learning approach to teachers is that it requires far less teacher involvement and direction than the reception learning proposed by Ausubel. However, this is not to imply that the teachers cease to give any guidance once the initial problem has been presented to learners. It must be pointed out that teachers can offer a continuum of guidance by adapting their teaching to different children and purposes. At one extreme, too little or no mediation can leave children without the means for discovery. At the other extreme, constant teacher direction and guidance may remove all opportunity for self direction and discovery.

Ausubel's views on learning provide an interesting contrast to that of Bruner. Ausubel's theory holds that human beings acquire knowledge and skills primarily through reception rather than through discovery. According to this theory, principles, concepts and ideas are presented to the learners and received by them, not discovered by them. In this way, the more organised and focused the presentation, the more thoroughly the person will learn. In Ausubel's approach to learning, teachers present materials in a carefully organised, sequenced, and somewhat finished form and consequently, learners receive the most usable material in the most efficient way. However, Ausubel does agree with Bruner that people learn by organising new information into hierarchies or coding systems. A coding system is a hierarchy of related concepts. It is arranged in such a way that the most generic category is placed at the top of the hierarchy, whereas the more specific categories form its base. Ausubel believes that learning should progress, not inductively as Bruner recommends but deductively (i.e. from the general to the specific, or from the rule or principle to examples). According to this approach, the most general and inclusive concepts are presented first, and the most specific concepts are derived from them.

Ausubel argues not only that expository teaching can lead to a high level of understanding and generality, but also that Bruner's discovery approaches are extremely time consuming without being demonstrably superior. From his review of literature on discovery learning, Ausubel (1977) found that research supporting this approach to teaching is virtually nonexistent. He concluded that enthusiasts of discovery learning have been supporting each other by citing one another's opinions and assertions as evidence by generalising extravagantly from questionable findings.

While Ausubel's guided discovery learning has greatly influenced educational practice, it is not as effective as its enthusiasts first thought, due perhaps to practical problems like class sizes, among others (Slavin, 1995). With too much emphasis on the role of the teacher, Ausubel's technique has not yet produced clear evidence to show that pupils do not remain passive during an instructional programme. Many experienced

teachers are reported to prefer Ausubel's technique to Bruner's (Woolfolk, 1996). The young and inexperienced teachers, not to speak of the untrained ones, cannot effectively use Ausubel's approach. Their limited experience or lack of it makes it difficult for them to analyse and arrange material logically; to provide the requisite cognitive structures where these are not available and to provide advance organisers where these will be needed. The ability to provide meaningful post-lesson summaries comes with experience and the early years of teaching by teachers who prefer using Ausubel's technique will amount to absolute chaos.

Ausubel asserts that although he is a cognitivist like Bruner, his reception or meaningful verbal learning is quite a different process when compared with Bruner's Discovery Learning theory. He wants this distinction between them to be known because to him most of what pupils learn both in and out of school is presented to them rather than discovered. Further, he believes that since most of the material children acquire is presented to them verbally, "...it is equally important to appreciate that verbal reception learning is not necessarily rote in character and can be meaningful without prior nonverbal or problem-solving experience" (Ausubel & Anderson, 1966, p. 89).

Where in Discovery Learning theory the essential feature for the learner is to discover something independently before the learner can internalise it, in reception learning, the entire content of what is to be learnt is presented to the learner in final form. The learner is not left to his own devices. He is only required to internalise the material. What the teacher does is to make it available to the learner, in a manner that is functionally reproducible for future use.

In Discovery Learning theory, a learner is thrown into a maze in which he must rearrange a given array of information, integrate it with his cognitive structure and reorganise or transform the combinations to create a desired result. Meaningful reception learning, however, involves much more than receiving a collection of ready-made concepts within an existing cognitive structure.

Because of the differences in learner's maturation and backgrounds, material taught is seldom understood by some of them meaningfully without correlating the new concepts with the existing cognitive field and translating them into a personal frame of reference. However, since the material is actually presented to the learner rather than discovered, the amount of the discovery activity is limited compared to that required in Discovery Learning theory where the learner is called upon to independently integrate the new material into an existing cognitive structure.

Another distinction between them is that in Discovery Learning theory for example, repetition gives rise to successive stages in a highly involving discovery process, because there is always some integrating to be done and transforming of the integrated combinations which results in poor memory. In reception learning, the opposite seems to be the case. Repeated encounters with the learning material has been known to increase memory. On this basis, the gap between learning and forgetting is not nearly as great in reception learning as in Discovery Learning theory. According to Ausubel (1977), forgetting in reception learning is the result of the material that is being learnt without having been properly assimilated into the original learning process.

Much of the controversy surrounding verbal reception learning would seem to have its source not only in the failure to distinguish between Reception and Discovery Learning theories but also in lack of appreciation of the essential features of meaningfulness in learning. It is charged by notable educationists that verbal learning is all rote learning unless it is preceded by recent nonverbal problem-solving experience (Slavin, 1995; Woolfolk, 1995), but Ausubel (1977) challenges this criticism by arguing that rote learning takes place only in instances where the learner does not possess a meaningful learning set. The truth of the matter is that most classroom teaching is organised along the lines of reception learning. Learning only becomes meaningful if it has a set to relate the learning material to a cognitive structure and the material is logically and not arbitrarily relatable.

Ausubel believes that reception learning is the most efficient method of meaningfully assimilating the content of a learning task. In his view, independent discovery of what is to be learnt is not required. The learning material is simply presented and only has to be internalised and made available for future use.

In summary, although Bruner and Ausubel present points of view that are opposite in many respects, both present a fundamentally cognitive view of the learner as an active, information processing organism whose efforts to drive meaning from the environment are closely related to the development of associated networks of concepts. Their recommendations for instruction are intended to lead to the acquisition of meaningful concepts, to maximise transfer, retention, and motivation, and to reduce passive rote learning.

Educational Implications and Recommendations

Advance organisers can be effectively applied in the teaching of various subjects across the curriculum. For example, Zimbabwe used to study Christianity and a little Islam as religions before independence. However, since independence in 1980, Zimbabwe has accepted that there are other religions like Hinduism and Buddhism. Young Zimbabweans must know about all these because as people, they operate in a multi-cultural society. A teacher teaching about Hinduism and Buddhism to pupils from Christian families must focus first on the similarities between say Christianity and Hinduism by way of advance organisers. Before he goes on to teach them about Buddhism, he spells out at the outset the differences and the similarities between Hinduism and Buddhism. By contrast, dissimilarities could also focus on prior knowledge of the two religions. In this way, the pupils' grasping of the concepts will be more enhanced than would be the case if they were introduced to the new material without prior reference to the knowledge they already have about those religions.

Ausubel (1963, 1977) strongly recommends the method of teaching from the general to the specific which he calls *progressive differentiation*. If the topic is unfamiliar to the learner, he obviously does not have a cognitive structure. The teacher must provide it. That is why Ausubel is at pains to emphasise the role of the teacher in providing structure and advance organisers.

Recommending a focus on the main ideas, Ausubel (1977) suggests that a teacher should always keep in mind the overall structure of the material to be presented and avoid getting carried away with too many specific details. Finally, Ausubel emphasises the role of post-lesson summaries. "These are important in that the main content of the lesson is revised in an integrated way" (Siann & Ugwuegbu, 1989, p. 114).

In considering the principle of sequencing, Bruner advises and recommends to teachers that learners need to move through some sequence. For example, the primary school Social Studies and Environmental Science curricula in Zimbabwe have been overhauled in recent years to reflect Bruner's Spiral Curriculum theory. To give an example, the subject Man Needs Shelter is taught at every level or in every primary school grade. Lower grades are taught to label and draw various types of shelter. As they move up, they are taught to classify the different types of shelter through comparing and contrasting between them. Better still, they are required to provide, through discussion and debates, reasons why man needs shelter.

The teaching of the great works of English Literature in Zimbabwe's lower secondary schools is a controversial subject at the moment. Great works by house-hold names in English Literature like William Shakespeare, Charles Dickens, Geoffrey Chaucer, George Bernard Shaw, and others, are unheard of in the Zimbabwe primary and junior secondary levels because it is assumed by curriculum designers and policy makers that the subjects and issues raised by these literary works in English Literature are too difficult for the learners between Grade 6 and Form 2 to comprehend. Yet at the same time, the onus is on us to give children an awareness of the meaning of tragedy and a sense of compassion for it.

If that is so, it is possible according to Bruner (1983) to teach young learners the literature of tragedy, for example, at the earliest age in a manner that illuminates it but does not threaten them. A beginning could be made through a re-telling of the great myths, through the use of their nursery rhymes.

In junior primary and lower secondary school, where most children are in the formal operations, it could be appropriate to employ the Piagetian approach by getting pupils to give their individual conceptions of tragedy (Piaget, 1977a). When we are equipped with the children's conception of either tragedy or comedy, then we will be in a position to know how they will translate whatever we present to them into their own subjective terms. With the passage of time, one goes beyond to more difficult versions of the same kind of literature or simply revisits some of the books used earlier. What is important here is that later teaching of the same topic in literature (or in any other subject for that matter) must build upon earlier reactions. This is what Bruner implies when he claims that, "...any subject area of knowledge can be presented in a form simple enough for almost any learner" (Siann & Ugwuegbu, 1985, p. 113).

Discovery Learning can work effectively if it is well structured. The ability to plan and scheme carefully is the product of, not only a prolonged period of training, but also requires that the teacher, apart from possessing the rare quality of diligence and dedication to duty, must be of a higher level of academic achievement. The problem in Zimbabwe with the use of Discovery Learning theory is that not all teachers at both primary and secondary school levels are trained. The situation is aggravated by the bulk of trained personnel who are either negligent or just lazy to use Discovery Learning theory effectively as a teaching method. For discovery learning to be effective in Zimbabwe, the large number of untrained teachers has to be replaced by trained ones and there has to be a radical change in attitude by trained and experienced teachers towards the application of this approach to learning, through in-service courses.

Conclusion

Research that has examined the effectiveness of Bruner's advance organisers has often used the processing organism for which the environment is meaningful to the extent that new input can be related to existing cognitive structure. Furthermore, the descriptions that each theory provides of the formation of cognitive structure are very similar, even though their language is different (categories and coding systems on the one hand; subsumers and subsumption on the other). In the final analysis, discovery and reception learning are not totally incompatible approaches to teaching and learning. As described by Bruner and Ausubel, each is intended to lead to the acquisition of meaningful concepts; to maximise transfer, retention, and motivation; and to reduce the extent to which school learning is a passive exercise in rote learning.

References

- Anderson, R. C. & Ausubel, D. P. (1966). *Readings in the psychology of cognition*. New York: Holt, Rinehart & Winston, Inc.
- Ausubel, D.P. (1963). *The psychology of meaningful verbal learning*. New York : Grune & Strahon.
- Ausubel, D.P. (1977). The facilitation of meaningful verbal learning in the classroom. *Educational Psychology*, 12, 162-178.
- Bruner, J. S. (1966). *Toward a theory of instruction*. Cambridge. Massachusetts: Harvard University Press.
- Bruner, J. S. (1974). *Beyond the information given*. London: George Allen & Unwin.
- Bruner, J.S. (1978). Learning the mother tongue. *Human Nature*, 43-49.
- Bruner, J.S. (1983). *Child's talk: Learning to use language*. New York: Norton & Company.

Bruner, J.S. (1991). The narrative construction of reality. *Critical Inquiry*, 18, 1-21.

Child, D.(1981). *Psychology and the teacher*. London: Holt Rinehart & Winston Ltd.

Crain, W. C. (1980). *Theories of development*. New Jersey:Prentice-Hall Inc., Englewood Cliffs.

Morgan, C. T. & King, R. A.(1975). *Introduction to psychology*. London: McGraw-Hill.

Piaget, J. (1977) *Cognitive development*. Englewood Cliffs, New Jersey : Prentice Hall.

Rogers, C. & Freiberg, H.J. (1994) (3rd ed.). *Freedom to learn*. Columbia, Ohio: Merrill.

Siann, G. & Ugwuegbu, D. C. E.(1989) (2nd ed.). *Educational psychology in a changing world*. London :George Allen & Unwin Ltd.

Slavin, R.E. (1995). *Co-operative learning*. (2nd ed.). Boston: Allyn & Bacon.

Woolfolk, A.E. (1995). *Educational psychology* (6th ed.). Boston: Allyn & Bacon.



This work is licensed under a
Creative Commons
Attribution – NonCommercial - NoDerivs 3.0 License.

To view a copy of the license please see:
<http://creativecommons.org/licenses/by-nc-nd/3.0/>

This is a download from the BLDS Digital Library on OpenDocs
<http://opendocs.ids.ac.uk/opendocs/>